

Wastewater Lagoon Site Soil Testing Report Checklist

Project Name: _____

Project Location: _____

Is pond located on sites that exhibit Karst features?

Information for Karst areas and potential Karst areas can be found from the following links

(1) http://programs.iowadnr.gov/ims/website/livestock_burial_zones/viewer.htm

Tip: Looking for Karst region by turning off the burial function and turning on Karst function of the interactive mapping

(2) <ftp://ftp.igsb.uiowa.edu/igspubs/pdf/ofm-2010-07.pdf>

Tip: Be patient and wait until the file opens since this is a large file and may take few minutes to open depending on internet connection speed.

Based on either one of the above maps, does your site fall within the Karst or <50' to the rock mapping units?

_____ YES

Send the following documents to Ms. Deborah Quade, Geology and Groundwater Section Supervisor, Iowa Geological and Water Survey, IDNR, 109 Trowbridge Hall, Iowa City, IA 52242-1319.

A) Wastewater Lagoon Site Soil Testing Report

B) Wastewater Construction Permit Design Schedule F (Treatment Project Site Selection) including general plat layout of area within a 5-mile radius of the project noting all important features (USGS map may be used) and site layout of area within 1,500-ft radius of the project, noting project and all features listed in Subrule 567 IAC 64.2(3)

_____ NO

Please send Wastewater Lagoon Site Soil Testing Report to the Assigned Project Manager in Wastewater Engineering Section, Iowa Department of Natural Resources, 502 East 9th Street, Des Moines, Iowa, 50319. If you have not submitted, please submit Wastewater Construction Permit Design Schedule F and associated site maps. Map instruction is the same as the above paragraph.

Soil Testing Report Content

The following information is required for soil testing report submittal for wastewater improvements project. The following checklist must be bound in the report submission to facilitate a timely review. (Please see Section 18C.2 and Section 18C.3 of Iowa Wastewater Facilities Design Standards for additional information.) Soils engineering reports may be returned if they are deemed incomplete by the Department.

Executive Summary

The soils engineering report shall contain an executive summary describing the reason for submitting the report, scope of project, scope of soils work performed, findings, and recommendations for the project.

Site Information

1. _____ Narrative description of investigation work.
2. _____ Site description and site geology.
3. _____ Estimate of highest groundwater level, provide the source of this estimate. Provide a water table map.
4. _____ Recommendations to meet the vertical separation distance requirements between the pond seal and maximum groundwater table; including a discussion on the effects of the groundwater table on the proposed site and proposed lagoon.
5. _____ Recommendations for soil additives or amendments, if applicable.
6. _____ Recommendations for soil sealant to meet percolation standards; and synthetic liner, if necessary.
7. _____ Seal, certification, and signature of Iowa licensed professional engineer certifying the report.

Maps and Drawings

8. _____ Topographic or aerial photo map of lagoon site (including at least a ¼ mile-radius of the surrounding area) showing any wells, title lines, restricted facilities, footprint of proposed lagoon system, surface area (in acres) of the proposed cells, and locations and elevations of geotechnical borings. The boring logs must be on a topographic base which is the same as the U.S. Geological Survey (USGS) quadrangles.
9. _____ Cross sections showing soil profile, groundwater flow directions and proposed lagoons bottom elevations.
10. _____ Proposed borrow soils location, if applicable.

Boring Logs and Data

11. _____ All elevations reported to USGS datum.
12. _____ Static groundwater level measured upon completion of drilling and at least 7 days after drilling.
13. _____ Compaction and permeability characteristics of site soils and/or borrow soils if these are planned to be used in the construction of the liner or berm materials.
14. _____ Drilling logs should identify the soils encountered, the soils parent material, the geological units present, the ground surface elevation (USGS datum), and the water table. Soil classification shall be based on American Society for Testing and Materials Designations D 2487-11.
15. _____ Depth to bedrock, if encountered.
16. _____ The minimum number of borings are described below:
 - a. A minimum number of three borings for ponds 0.5 acres or less.
 - b. Four or more borings for ponds larger than 0.5 acres.
 - c. One additional boring per acre recommended for ponds larger than four acres.
 - d. Location of the deepest borings at points of lowest landscape position or elevation while maintaining a true cross sectional indication of substrata characteristics for the entire site.
 - e. All borings to a minimum depth of ten feet below the bottom elevation of the pond.
 - f. At least one boring to a depth of 25 feet below the bottom elevation of the pond or into bedrock, whichever is shallower.
 - g. If the boring of 25 feet encounters a water bearing strata, each of the required borings shall also extend to the water bearing strata, with a maximum depth of 25 feet.
 - h. Sufficient borings at borrow pit areas to establish the consistency and nature of the material to a depth of at least one foot below the lowest borrow layer.